

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPELLANT :	Helen O'Hara, <i>et al.</i>	CONFIRMATION No.:	3549
SERIAL NUMBER :	09/938,649	EXAMINER:	Aileen Baker Felton
FILING DATE :	August 27, 2001	ART UNIT:	1793
TITLE :	GASSER COMPOSITION AND METHOD OF GASSING		

APPELLANT'S REPLY BRIEF UNDER 37 C.F.R. § 41.41

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I. INTRODUCTION

Pursuant to 37 C.F.R. § 41.41, this Reply Brief is being filed within two months of the Examiner's Answer mailed July 22, 2009 (hereinafter "Answer"). This Reply Brief responds to the new issues raised in the Answer. Reference to Appellant's Appeal Brief ("the Brief") herein will be made to the Supplemental Appeal Brief filed May 13, 2009.

II. STATUS OF CLAIMS

Claims 60-78 stand rejected under 35 U.S.C. §102(b) as allegedly being anticipated by or in the alternative, under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 5,076,867 to McKenzie ("McKenzie"). [Answer, page. 3].

III. RESPONSE TO EXAMINER'S ARGUMENTS

I. **The Examiner continues to mischaracterizes McKenzie, and thus, the factual basis of the rejections is erroneous.**

The Examiner asserts: "McKenzie discloses mixing the nitrite with oxidizer and possible [sic] an accelerator and then adding them to the emulsion." [Answer, page 4].

The Examiner continues to mischaracterize McKenzie, and thus, the factual basis of the rejection is erroneous.

As pointed out in the Brief, McKenzie discloses forming an emulsion comprising an oxidizer salt and fuel in which thiourea (accelerator) is contained within the oxidizer phase. [See Brief, page 7; McKenzie, col. 4, lines 33-64]. This emulsion, containing thiourea, is then gassed when a gassing agent (e.g., sodium nitrite) is added (and the nitrite and oxidizer solution containing the thiourea react). [See *id.*].

Column 4, line 52 – column 5, line 16 of McKenzie further elaborates on how the emulsion may be formulated. The emulsion to be gassed is formulated in a conventional manner by dissolving the oxidizer salt(s) and other aqueous soluble constituents in water which may also contain the gassing accelerator. This aqueous solution is then added to a solution of the emulsifier and immiscible liquid organic fuel and the resultant mixture stirred vigorously to produce an emulsion of the aqueous solution in a continuous liquid hydrocarbon fuel phase. When gassing is desired, which could be immediately after formation of the emulsion or up to several months afterwards, the gassing agent (i.e., sodium nitrite) is added to and mixed homogeneously throughout the emulsion to produce uniform gassing at the desired

rate. Appellant submits that chemical gassing of this type is conventional and is discussed on page 3, lines 19-26 of the as-filed Specification.

McKenzie, however, makes no indication or suggestion of the claimed gasser solution formed by mixing an inorganic nitrite, ammonium species and optionally an accelerator. As discussed above, the sodium nitrite gasser agent in McKenzie is not mixed with an ammonium species, or optional accelerator (e.g., thiourea), before it is added to the emulsion.

By contrast, claim 60 recites (a) forming a gasser solution comprising a solution of an inorganic nitrite, an ammonium species and optionally an accelerator¹; and (b) adding the claimed gasser solution (which solution includes the inorganic nitrite, the ammonium species and optionally the accelerator) to an emulsion having a discontinuous aqueous phase comprising inorganic oxygen releasing salts, a continuous water immiscible organic phase and a poly[alk(en)yl succinic anhydride based emulsifier. PIBSA may be one type of poly[alk(en)yl succinic anhydride based emulsifier used. [See, e.g., claim 61]. Further, claim 60 recites that the gasser solution is formed during or immediately before addition of the gasser solution to the emulsion explosive composition by mixing the inorganic nitrite, ammonium species and optionally the accelerator.

¹ Appellant notes that the "accelerator" recitation in claim 60 is optional. To the extent that the Examiner relies on McKenzie as teaching an accelerator, the Examiner inconsistently applies this feature to the claim recitations. In particular, claim 60 recites that the gasser solution – which is subsequently added to the emulsion – includes an inorganic nitrite, an ammonium species and optionally an accelerator. McKenzie, on the other hand, teaches that the emulsion includes the accelerator (thiourea).

Accordingly, McKenzie fails to teach each and every recitation of claim 60.

For at least the foregoing reason, the Examiner has legally erred and the rejection of claim 60 is improper.

II. The Examiner fails to consider evidence of non-obviousness.

The Examiner further states:

... there is no evidence that rebuts the 35 U.S.C. 103 rejection that has been set forth which indicated that [*sic*] is obvious to vary the order of steps of addition of gasser solution to the emulsion explosive. Applicant makes general allegations of unexpected results but provides no evidence of any such results. Note that attorney arguments cannot substitute for these results.

[Answer, pages 4-5, internal citations omitted].

Appellant submits that the Examiner has legally erred for at least the reason that the Examiner fails to consider evidence of non-obviousness. See *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992) ("patentability is determined on the totality of the record, by a preponderance of evidence with due consideration to persuasiveness of the argument."); see also *In re Piasecki*, 745 F.2d 1468, 1471-72, 223 USPQ 785, 787 (Fed. Cir. 1984) ("All evidence on the question of obviousness must be considered, both that supporting and that rebutting the prima facie case."). "In reviewing the examiner's decision on appeal, the Board must necessarily weigh all of the evidence and argument." *Oetiker*, 977 F.2d at 1445, 24 USPQ2d at 1444.

As discussed above, McKenzie discloses forming an emulsion comprising an oxidizer salt and fuel in which thiourea is contained within the oxidizer phase. This emulsion, containing thiourea, is then gassed when the gasser agent nitrite is added.

McKenzie, however, does not disclose mixing a gasser solution of nitrite, ammonium species and optional accelerator, and then adding this gasser solution to the emulsion having an oxidizer salt and an emulsifier, as claim 60 recites.

Nor is the claimed order of steps in claim 60 obvious in light of the teachings of McKenzie. To be sure, the order of steps may be patentable where the steps provide new and unexpected results over the prior art. *See In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946). Appellant's as-filed disclosure specifically discusses the drawbacks of the sequence of steps taught by McKenzie. In fact, Appellant discloses that the "[s]eparate addition of the inorganic nitrite and the ammonium species directly to the emulsion explosives composition does not provide the advantages of the invention which lie in efficient gassing rates and the reduction of [sic] elimination of the problem of emulsion breakdown experiences using nitrite as the chemical gassing agent." [Brief, page 7; Appellant's Specification, page 9, lines 26-31]. "[W]hen the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be nonobvious." *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, ___; 82 USPQ2d 1385, 1395 (2007) (citing *U.S. v. Adams*, 383 U.S. 39, 51-52 (1966)).

Appellant has determined that one of the main problems associated with the use of nitrite gassing agents is that nitroso species are generated during the gassing reaction and these species may react with (functional moieties on the head group of) the emulsifier that is used to produce the water-in-oil. Reaction between the nitroso species and the emulsifier causes chemical changes in the emulsifier and this can have

a damaging effect on the emulsifying capability of the emulsifier. Specifically, the reaction can result in breakdown of the emulsion into constituent aqueous and oil phases [See Appellant Specification, page 3, line 27 – page 4, line 10]. Further, the reaction between a nitrite gassing agent (such as sodium nitrite) and poly(isobutenyl)succinic acid-based (PiBSA-based) emulsifiers cannot be used in nitrite-gassed emulsion explosive compositions due to problems with subsequent emulsion stability. [See *id.* at page 4, lines 1-22]. Another problem associated with gassing agents, including nitrite gassing agents, is the difficulty of evenly distributing the gassing agent throughout the emulsion. This problem is recognized in International (PCT) Patent Application Publication No. WO 89/02881, described at page 4, lines 23-29 of the as-field specification.

According to Appellant's claimed invention, the gasser solution is formed during or immediately before addition to the emulsions, and the chemical gassing reaction that takes place occurs within droplets of the gasser solution within the emulsion, such that there is substantially no chemical attack on the emulsifier. Appellant's claimed invention overcomes the above-noted drawbacks in the art. [See *id.* at page 5, lines 13-27]. Appellant's claimed sequence of process steps, therefore, clearly provides advantageous results that McKenzie's process cannot provide.

The Examiner's further assertion that remarks by counsel are unpersuasive lacks merit. First, Appellant is not relying solely on statements of counsel, but also on the disclosure in the as-filed specification. Second, rebuttal evidence and arguments can be presented in the specification, *In re Soni*, 54 F.3d 746, 750, 34 USPQ2d 1684, 1687

(Fed. Cir. 1995) or by counsel. *In re Chu*, 66 F.3d 292, 299, 36 USPQ2d 1089, 1094-95 (Fed. Cir. 1995).

For at least the foregoing reasons, the Examiner has legally erred and the rejection is improper.

III. The Examiner incorrectly concludes that the PIBSA mentioned in McKenzie is used as an emulsifier.

The Examiner states:

Applicant further argues that McKenzie uses PIBA as a surfactant and not as the emulsifier. This is not persuasive since if the chemical is added to the composition, it will function as an emulsifier. The fact that McKenzie uses any additional emulsifiers is not relevant since the claim scope is "comprising" and allows for additional components. It is irrelevant whether one calls PIBSA an emulsifier or a surfactant, its properties cannot be removed from it by calling it by another name.

[Answer, page 5].

Appellant submits that the Examiner has legally erred for at least the following reasons.

First, Appellant submits that the use of emulsifiers and surfactants is different in the art, and telling of the differences in McKenzie.

Second, Appellant points out that the Examiner provides no evidence or basis in fact to support a finding that "if [PIBSA] is added to the composition, it will function as an emulsifier." In fact, quite contrary to the Examiner's assertion, McKenzie recognizes both emulsifiers and surfactants, and indicates that PIBSA is used as a surfactant. In particular, McKenzie teaches that derivatives of PIBSA may be used as a stabilizing

surfactant. [See McKenzie, col. 3, lines 8-11; Table 1, footnote (i)]. And there is no indication in McKenzie that the emulsifier used is PIBSA. [Cf. McKenzie, col. 3, lines 51-61; Table 1, footnotes (a) and (b) (emulsifiers used to formulate the emulsion are sorbitan monooleate or a polymeric emulsifier as per U.S. Patent No. 4,931,110)]. Appellant also notes that McKenzie mentions: "For optimum performance, the selection of a surfactant can be based on the type of AN prill and coatings involved as well as the type of emulsifier system used." [McKenzie, col. 2, lines 16-19, emphasis added]. Thus, McKenzie does not disclose that PIBSA is used as an emulsifier.

Nor is it inherent either. Indeed, the fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993). "In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original).

While McKenzie might disclose that the emulsion may contain PIBSA, this is not the same as PIBSA being used as emulsifier when the emulsion is formed. Put differently, just because the same composition may be discussed in McKenzie, this does not mean that it is used in the same manner.² In particular, McKenzie discloses

² As an analogy, Appellant points to water. Water may be used to make coffee and to make a cake. Indeed, the water is mixed with different ingredients and subject to different processing in making coffee and a cake. Water functions differently in each.

that the surfactant is added to ammonium nitrite (AN) prills or the dissolution of a surfactant in the liquid organic fuel of the ammonium nitrite fuel oil (ANFO) prills prior to the addition of the liquid fuel to the ammonium nitrate prills. [See McKenzie, col. 1, lines 24-31]. Accordingly, McKenzie makes it clear that the PIBSA surfactant in McKenzie is not used as an emulsifier in the formation of the water-in-oil emulsion to which the prills are added. [Cf. Kenzie, col. 5, lines 17 – 20].

The Examiner's attempt to equate a (PIBSA) surfactant to the claimed emulsifier in claim 60, and/or claim 61, is therefore, erroneous.

Appellant further submits that just because claim 60 recites the transitional word "comprising" in the preamble, this does not mean that Examiner can ignore elements of the claimed invention. In a recent decision construing the term "comprising," the Federal Circuit recently held that "[a]nticipation cannot be found, as a matter of law, if any claimed element of limitation is not present in the reference." See *In re Skvorecz*, Slip Opinion, page 9 (Fed. Cir. September 3, 2009). To be sure, "[t]he signal 'comprising' does not render a claim anticipated by a device [or method] that contains less (rather than more) than what is claimed." [*Id.* at page 8].

For at least the foregoing reasons, Appellant submits that the Examiner has legally erred and that the rejection is improper.

IV. McKenzie's mention of pH, amounts and density are not related to the claimed gasser solution, or claimed emulsifier, and cannot be obtained by mere routine optimization.

The Examiner further asserts:

Applicant argues that it would not be obvious to vary the parameters of the emulsion such as pH, amounts and density to achieve a desired result. However, note the case law: It is well-settled that optimizing a result effective variable is well within the expected ability of a person of ordinary skill in the subject art. In re Boesch, 617 F. 2d 272, 205 USPQ 2156 (CCPA 1980), In re Aller, 220 F.2d 454, 105 USPQ 233 (CCPA 1955). Further, there is no evidence to suggest that these properties would not be inherent to the emulsion or that it would not be obvious to attain them through routine experimentation.

[Answer, page 5, internal citation omitted].

The Examiner has legally erred for at least the reason that McKenzie's mention of pH, amounts and density are not related to the claim features, and thus, cannot be obtained merely by routine experimentation.

For example, McKenzie does not teach or suggest the claimed gasser solution, nor the claimed emulsifier. The parameters which the Examiner refers to in McKenzie are related to the surfactant added to the AN pills or to the fuel portion of ANFO pills — not the claimed gasser solution or emulsifier. For example, the amounts disclosed at column 3, lines 15-30 of McKenzie are the amounts of surfactant. Thus, variation in parameters such as pH, amounts and density are merely incidental and do not address the above shortcomings, particularly when one considers the differences between McKenzie and the claimed invention "as a whole" under 35 U.S.C. § 103.

Indeed, a particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). The Examiner, however, has not made (and cannot make) such a showing of the recognize results (i.e., producing the claimed gasser solution and claimed emulsifier). Appellant submits that these parameters cannot be obtained merely by routine optimization.

For at least the foregoing reasons, Appellant submits that the Examiner has legally erred and that the rejection is improper.

IV. CONCLUSION

For at least the foregoing reasons, Appellant respectfully appeals to this Honorable Board to promptly reverse the rejections of claims 60-78 and to issue a decision in favor of Appellant, as all of the pending claims are in condition for allowance.

Date: **September 22, 2009**

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